

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
27 December 2001 (27.12.2001)

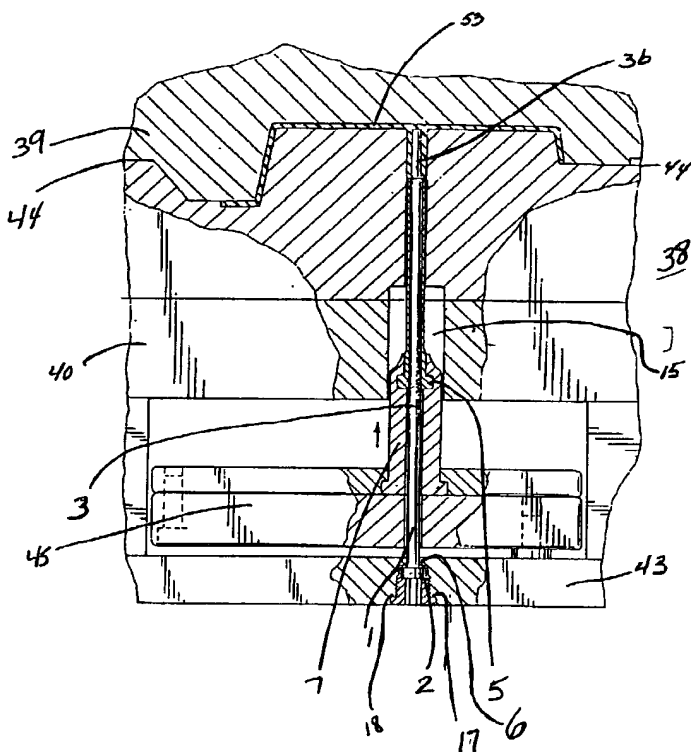
PCT

(10) International Publication Number  
**WO 01/98056 A1**

- (51) International Patent Classification<sup>7</sup>: **B29C 45/40** (72) Inventor; and  
(75) Inventor/Applicant (for US only): **STARKEY, Glenn**  
(21) International Application Number: **PCT/US01/19744** [US/US]; Progressive Components International Corporation, 235 Industrial Drive, Wauconda, IL 60084 (US).  
(22) International Filing Date: **19 June 2001 (19.06.2001)** (74) Agents: **HAMILL, Mark, A. et al.**; Barnes & Thornburg, 2600 Chase Plaza, 10 South LaSalle Street, Chicago, IL 60603 (US).  
(25) Filing Language: **English**  
(26) Publication Language: **English** (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**  
(30) Priority Data: **60/212,248** **19 June 2000 (19.06.2000)** **US**  
(71) Applicant (for all designated States except US): **PROGRESSIVE COMPONENTS INTERNATIONAL CORPORATION** [US/US]; 235 Industrial Drive, Wauconda, IL 60084 (US). (84) Designated States (regional): **ARIPO** patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian

[Continued on next page]

(54) Title: A CORE PIN AND SLEEVE AND METHOD OF USING SAME



(57) Abstract: The present invention includes an improved ejector sleeve (5) having thinner side-walls than prior sleeves. The sleeves generally include a ring (31) for mounting the sleeve, a central bore (42) for receiving a core pin (1), a tube portion extending from the ring to a tube end portion. The side-walls defining the tube end portion have a thickness of less than forty thousandths, and preferably thirty thousandths of an inch. Preferably, the coated ejector sleeve is provided in which a thin, lubricous coating of nickel, chromium or alloys of chromium or nickel is applied to at least a portion of the sleeve. The coating is applied in thickness of less than .0001 inch which improves the wear characteristics of the pins and sleeves as well as allowing the coated pins and sleeves to be stocked and used as nominal thickness parts.

WO 01/98056 A1